REMARKS

1. Information Disclosure Statement

The Office Action indicates that the patents cited in the Information Disclosure Statement filed May 8, 2001, were not considered because copies of the references were not present in the application file. A Supplemental IDS is included with copies of those references.

2. Specification and Drawings

The Office Action objects that the specification includes drawings. Applicants believe this objection is based on the originally filed specification. A substitute specification was filed on August 21, 2001. The Amendment filed on August 27, 2002, included amended drawings. Copies of the substitute specification and August 2002 amendment are enclosed. Applicants believe these papers address the issues raised in paragraphs 2 and 4 of the Office Action.

Paragraph 3 of the Office Action requires correction of the spelling of Karstedt, and identification of the chemical identity of Karstedt's and Speier's catalysts. The specification has been amended to address these issues. The spelling of Speiers has also been corrected.

3. Claims

The claims have been amended to distinguish the present invention from the cited prior art. None of the cited references teach or suggest making and curing a POS- or POSS-based composition as now claimed in the present invention.

Applicants also believe the amended claims address the Section 112 objections.

CONCLUSION

Applicants have amended the specification and claims in response to the objections raised in the Office Action, and believe the claims are now in condition for allowance. If any further questions should arise prior to a Notice of Allowance, the Examiner is respectfully invited to contact the attorney at the number set forth below.

Date: April 22, 2003

Respectfully submitted,

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CERTIFICATE OF MAILING

I, Diana Dearing, hereby certify that this paper (along with any items referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: BOX RESPONSE - FEE, Commissioner of Patents, Washington, D.C. 20231.

Date: April 22, 2003

Diana Dearing

APPENDIX

Version with Markings to Show Changes Made

IN THE SPECIFICATION

Please amend the specification as follows:

1. Amend the paragraph at page 5, lines 5-19 to read as follows:

This invention teaches the use of two different chemical processes for the preparation of hybrid (organic-inorganic) silicon-based molecular systems which contain strained organic groups. The process depicted in Figure 2 depicts a general hydrosilation reaction of a POSS-silane with a vinyl or other olefinic group on a molecule that also contains a ring-strained olefinc group. The reaction is effectively carried out with the aid of a late-metal catalyst such as [Karsteadts] Karstedt's catalyst (at concentration ranges from 0.01 to 5 wt %) (see, e.g. U.S. Patent No. 3,814,730), [Spiers] Speier's catalyst (hexachloroplatinic acid in 2-propanol), and 5% palladium supported on carbon. The hydrosilation reaction effectively promotes the oxidative addition of the silicon-hydride bond from the silane across the olefinic carbon-carbon double bond of the strained-ring olefin bearing compositions claimed herein. The hydrosilation is an effective and reliable process for the addition of strained ring olefins to most silanes, carbosilanes, siloxanes, POSS, and POS systems. The hydrosilation process can produce undesirable isomeric products or impurities that consequently may necessitate purification of the final product to obtain the desired product performance level. The hydrosilation procedure is

desirable because of the commercial availability of silicon-based molecules bearing hydride functionalities and vinyl and olefin bearing strained olefinc functionalities.

2. Amend the paragraph at page 7, lines 10-20 to read as follows:

Additionally, the compositions can be cured by reacting them with a number of di and polyfunctional silanes in the presence of a hydrosilation catalyst such as palladium, and platinum halides, olefin complexes or carbon supported versions. Silanes include but are not limited to telechelic hydride terminated oligomers such as tetramethyldisiloxane disilane, polydimethylsiloxane, and nontelechelic hydride bearing systems such as polycarbosilanes, POSS-polysilanes and polysiloxanes. Examples of effective hydrosilation catalysts include [Karsteadts] Karstedt's catalyst, [Spier's] Speier's catalyst, and 5% palladium supported on carbon. Such catalysts effectively promote the oxidative addition of the silicon-hydride bond of the silane to the olefinic carbon-carbon double bond of the strained-ring olefin bearing compositions claimed herein. The elimination of ring-strain during the hydrosilation process is also a driver of such polymerizations.

IN THE CLAIMS

Please amend the claims as follows:

22. (Twice amended) A method of making and curing a POS- or POSS-based composition, [first composition selected from the group consisting of silane, siloxane,

silsesquioxane, POSS, silicate, and POS, each bearing at least one strained ring olefin, wherein the first composition is a monomer, a polymer, or an oliogomer,] comprising the steps of:

(a) contacting a base composition selected from the group consisting of POSS and POS with effective amounts of a strained ring olefin in a solution in the presence of effective amounts of a catalyst which promotes addition of the ring-strained olefin to the base composition through an olefinic carbon-carbon double bond of the strained ring olefin, thereby creating a POS- or POSS-based composition with ring-strained olefinic functionality; and

(b) curing the POS- or POSS-based composition with ring-strained olefinic functionality by reacting it [reacting the first composition] with effective amounts of a mixture of (a) at least one metal-based catalyst selected from the group consisting of carbenes, halides, phosphates, acetates, and salts of molybdenum, tungsten, and ruthenium and (b) at least one cocatalyst selected from the group consisting of organoaluminum halides and aluminum halides.

25. (Twice amended) A method of making and curing a POS- or POSS-based composition, [first composition selected from the group consisting of silane, siloxane, silsesquioxane, POSS, silicate, and POS, each bearing at least one strained ring olefin, wherein the first composition is a monomer, a polymer, or an oliogomer,] comprising the steps of:

(a) contacting a base composition selected from the group consisting of POSS and POS with effective amounts of a strained ring olefin in a solution in the presence of effective amounts of a catalyst which promotes addition of the ring-strained olefin to the base composition

through an olefinic carbon-carbon double bond of the strained ring olefin, thereby creating a POS- or POSS-based composition with ring-strained olefinic functionality; and

(b) curing the POS- or POSS-based composition with ring-strained olefinic functionality by reacting it [reacting the first composition] with effective amounts of at least one difunctional or polyfunctional silane in the presence of effective amounts of a catalyst selected from the group consisting of palladium halides, platinum halides, palladium-olefin complexes, platinum-olefin complexes, carbon-supported palladium halides, carbon-supported platinum halides, carbon-supported palladium-olefin complexes, and carbon-supported platinum-olefin complexes. [and platinum (a) halides, (b) olefin complexes, or (c) carbon supported versions.]

26. (Twice amended) A method of making and curing a POS- or POSS-based composition, [first composition selected from the group consisting of silane, siloxane, silsesquioxane, POSS, silicate, and POS, each bearing at least one strained ring olefin, wherein the first composition is a monomer, a polymer, or an oliogomer,] comprising the steps of:

(a) contacting a base composition selected from the group consisting of POSS and POS with effective amounts of a strained ring olefin in a solution in the presence of effective amounts of a catalyst which promotes addition of the ring-strained olefin to the base composition through an olefinic carbon-carbon double bond of the strained ring olefin, thereby creating a POS- or POSS-based composition with ring-strained olefinic functionality; and

(b) curing the POS- or POSS-based composition with ring-strained olefinic functionality by reacting it [reacting the first composition] with effective amounts of a vulcanizing agent selected from the group consisting of organoperoxides, persulfides, and sulfur.